

5E Professional Development for All Classrooms

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The title of my professional development will be “5E Professional Development for All Classrooms.” I chose to explore offering pedagogical PD because I am the only Chemistry/ Earth Science teacher in a science department of 2.5 teachers. In our small school, we have the opportunity to collaborate and develop overlapping, cross-curricular units using the 5E model and the new technology we have been gifted through a generous donation. Our principal would like all teachers to explore cross-disciplinary uses of our new technology and offering PD is perfect timing to start this process.

5E lessons were the first big idea I learned through the NASA Endeavor program and were easily adapted into my daily routine. While taught to us with a lens on STEM, I hope to use this same model to help other subject areas engage with our new technology. I will offer ideas from the abundant NASA resources for engagement. For example, a quick search for Art resources showcases Art contests for which our students could use our 3D printer or laser cutter. For English or writing, opportunities for exploration and writing about constellations would merge an ELA class with my Astronomy class. The opportunities are endless and only require some time to make and develop the connections.

My audience will be all grades 9-12 teachers; there are only 24 of us, spanning all subject areas with a target of all 180 students. Maine uses both NGSS and CCSS and the combination of

these two is not difficult and happens frequently in my own lesson development. The PD will partially focus on marrying these two in cross-curricular lessons.

Due to the pandemic, on Wednesdays we offer asynchronous work to our students, while teachers participate in PD and lesson planning. This is a day I would love to keep post-pandemic, as we finally have time for deeper cross-content conversations. I spoke with my principal last spring about this class and she saved some time for me to offer a few short PD lessons in conjunction with our technology department in an effort to make the new technology available to all teachers. We spent the weeks before the holiday break designing ornaments using CAD programming and then cutting the ornaments out with the laser cutter. We were able to generate buy-in from all. Instead of an ornament, our Health and PE teacher made a cribbage board. I plan to continue this model with 3-4, 30 minute offerings that build on each other. These are set to begin at the end of February.

Pre and post surveys will be on Google Forms, a platform we use often (see Appendix A). My pre-survey will ask about experience with 5E lessons and what cross-curricular ideas they would like to explore. My post survey will focus on how helpful the information I share is and what resources they need going forward. I do not anticipate this process ending with the finalization of this project as it is a district goal that I am happy to play a large role in. If needed, I will also collect information via personal interviews to learn how I can better meet the needs to teachers in developing their own 5E lessons.

Finally, my hope is for updated curriculum, cross-curricular development, increased rigor and memorable connections. We are a small school with incredible heart and potential, and hundreds of thousands of dollars of equipment for us all to use.

References

Bybee, R. W. (2013). *Translating the NGSS for classroom instruction*. NSTA Press, National Science Teachers Association.

Educator Guide: Inflatable Planetarium - Stories in the Sky. (2018, August 06). Retrieved from <https://www.jpl.nasa.gov/edu/teach/activity/inflatable-planetarium/>

Joseph, N. (2018, October 29). NASA Langley's 2019 Art Contest Wants Explorers. Retrieved from <https://www.nasa.gov/press-release/nasa-langley-s-2019-art-contest-wants-explorers>

Appendix A

Pre-PD Survey Questions (will be delivered via Google Forms):

- 1) How do you feel about creating cross-curricular opportunities for our students? (short answer)
- 2) What support do you think you will need as we look at creating cross-curricular opportunities? (short answer)
- 3) In thinking about the new technology we have, what are you most excited to learn about? (short answer) *maybe include list?
- 4) Have you ever used the 5E method while creating a new lesson? (multiple choice)

Post- PD Survey Questions (will be delivered via Google Forms):

- 1) Will you use the 5E method when designing new lessons? (multiple choice)
- 2) What technology are you most excited to use in your class? (short answer)
- 3) What help will you need going forward? (short answer)
- 4) What suggestions or feedback do you have for me as the presenter? (short answer)